

Notice of Allowability

Application No.

09/591,122

Examiner

Kandasamy Thangavelu

Applicant(s)

HELLERSTEIN ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to January 26, 2005.
2. ☒ The allowed claim(s) is/are 1-4, 6-13 and 15-20.
3. ☒ The drawings filed on 24 November 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER

DETAILED ACTION

Introduction

1. This communication is in response to the Applicants' communication dated January 26, 2005. Claims 1-4, 6-13 and 15-20 of the application are pending.

Drawings

2. The drawings submitted on 24 November, 2003 are accepted.

Examiner's Amendment

3. Authorization for this examiner's amendment was given in a fax confirmation by Mr. Robert Griffith on March 25, 2005.

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

4. In the Claims:

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In Claim 1, Lines 5-8, “at least one processor operative to at least one of: (i) adapt at least one of the one or more sub-models, and determine an optimum combination of sub-models, to be used in computing on-line predictions, when a change is detected in data associated with the one or more operations for which predictions may be requested;”

has been changed to

--at least one processor operative to at least one of: (i) determine an optimum combination of sub-models from the one or more sub-models to be used in computing on-line predictions, wherein the determination comprises at least one of including and excluding at least one of the one or more sub-models, the determination being made when a change point is detected in data associated with the one or more operations for which predictions may be requested--.

In Claim 10, Lines 5-7, “adapting at least one of the one or more sub-models and determining an optimum combination of sub-models, to be used in computing on-line predictions, when a change is detected in data associated with the one or more operations for which predictions may be requested”

has been changed to

-- determining an optimum combination of sub-models from the one or more sub-models to be used in computing on-line predictions, wherein the determination comprises at least one of including and excluding at least one of the one or more sub-models, the determination being made when a change point is detected in data associated with the one or more operations for which predictions may be requested--.

In Claim 19, Lines 6-8, “adapting at least one of the one or more sub-models and determining an optimum combination of sub-models, to be used in computing on-line predictions, when a change is detected in data associated with the one or more operations for which predictions may be requested”

has been changed to

-- determining an optimum combination of sub-models from the one or more sub-models to be used in computing on-line predictions, wherein the determination comprises at least one of including and excluding at least one of the one or more sub-models, the determination being made when a change point is detected in data associated with the one or more operations for which predictions may be requested--.

Reasons for Allowance

5. Claims 1-4, 6-13 and 15-20 of the application are allowed over prior art of record.

6. The following is an Examiner's statement of reasons for the indication of allowable subject matter:

The closest prior art of record shows:

(1) methods of estimating motion in image data include producing a first image data frame from the received video signal containing information of higher resolution and producing a second image data frame of coarser resolution; an estimate of motion in the second image data

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frame is then produced and used to determine an estimate of motion in the first image data frame; the estimate of motion in the second image data frame is determined by reading a plurality of motion vectors from an image block in the previous version of the second image data frame; to obtain this estimate, an optimum motion vector is determined by predicting a plurality of motion vectors based on the corresponding plurality of motion models and selecting the best model and vector which yields the smallest difference signal; the motion vector prediction model uses a 2-D spatial model and a 3-D spatial model; the 3-D spatial model includes multiple elementary models to effectively treat motion discontinuity (**Kim et al.**, U.S. Patent 5,793,429);

(2) a model predictive controller for controlling multi-variable, time-varying, industrial processes that exhibit non-linear response characteristics; the controller uses plant measurement variables to update one or more variables of each submodel of a nonlinear model, the nonlinear model having two or more of the submodels, each of the one or more submodels having a predetermined one of two or more model predictive controllers; converting at least one updated submodel of the updated nonlinear model to a linear submodel when the change in one or more of the updated submodel variables has exceeded a predetermined threshold; using the nonlinear model in a real time optimizer to compute targets for all of the two or more model predictive controllers; using the linearized submodel to obtain submodel having fewer states; using the fewer states submodel to tune the parameters of the model when the performance of the submodel exceeds a predetermined limit (**Hess et al.**, U.S. Patent 6,826,521); and

(3) an approach to predicting threshold violations in terms of the probability that the threshold will be violated and the time when it is anticipated that the threshold will be violated; the model consists of two submodels; the first addresses the time-varying or nonstationary

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behavior of the measurement variables; the second addresses the stationary, time-serial dependencies once the effects of the first model has been removed; the model considers the time of the day, day-of the week and the month; the model is divided into five components – the overall mean, the deviation due to the time of the day, the deviation due to the day of the week, the deviation due to the month and the random variable that quantifies the statistical error; the quality of the models is evaluated using the residuals (Hellerstein et al., “An approach to predictive detection for service management”, IEEE, May 1999).

6.1 Applicants’ first set of claims consists of Claims 1-4 and 6-9.

Independent Claim 1 is directed to an apparatus for providing on-line adaptive predictions for use by one or more applications. The claim identifies the uniquely distinct features of:

“at least one processor operative to determine an optimum combination of sub-models from the one or more sub-models to be used in computing on-line predictions, wherein the determination comprises at least one of including and excluding at least one of the one or more sub-models, the determination being made when a change point is detected in data associated with the one or more operations for which predictions may be requested”.

Because the closest prior art fails to teach or fairly suggest at least one processor operative to determine an optimum combination of sub-models from the one or more sub-models to be used in computing on-line predictions, wherein the determination comprises at least one of including and excluding at least one of the one or more sub-models, the determination being

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made when a change point is detected in data associated with the one or more operations for which predictions may be requested, as claimed by the Applicants, Claims 1-4 and 6-9 are deemed novel and allowable.

6.2 Applicants' second set of claims consists of Claims 10-13 and 15-18.

Independent Claim 10 is directed to a method of providing on-line adaptive predictions for use by one or more applications. The claim identifies the uniquely distinct features of:

“determining an optimum combination of sub-models from the one or more sub-models to be used in computing on-line predictions, wherein the determination comprises at least one of including and excluding at least one of the one or more sub-models, the determination being made when a change point is detected in data associated with the one or more operations for which predictions may be requested”.

Because the closest prior art fails to teach or fairly suggest determining an optimum combination of sub-models from the one or more sub-models to be used in computing on-line predictions, wherein the determination comprises at least one of including and excluding at least one of the one or more sub-models, the determination being made when a change point is detected in data associated with the one or more operations for which predictions may be requested, as claimed by the Applicants, Claims 10-13 and 15-18 are deemed novel and allowable.

6.3 Applicants' third set of claims consists of Claims 19-20.

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Independent Claim 19 is directed to an article of manufacture for providing on-line adaptive predictions for use by one or more applications. The claim identifies the uniquely distinct features of:

“determining an optimum combination of sub-models from the one or more sub-models to be used in computing on-line predictions, wherein the determination comprises at least one of including and excluding at least one of the one or more sub-models, the determination being made when a change point is detected in data associated with the one or more operations for which predictions may be requested”.

Because the closest prior art fails to teach or fairly suggest determining an optimum combination of sub-models from the one or more sub-models to be used in computing on-line predictions, wherein the determination comprises at least one of including and excluding at least one of the one or more sub-models, the determination being made when a change point is detected in data associated with the one or more operations for which predictions may be requested, as claimed by the Applicants, Claims 19-20 are deemed novel and allowable.

7. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 571-272-3717. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska, can be reached on 571-272-3716. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.

K. Thangavelu
Art Unit 2123
March 25, 2005



KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER